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Conferees Advance Toward Uniformity Of Technical Plans

By Raymond Nathan
Chief of CAA Press Section

Substantial strides toward uniformity of technical standards and procedures in international flying were achieved by experts of 54 nations meeting at Chicago, with T. P. Wright, Administrator of Civil Aeronautics, coordinating their work as Technical Secretary of the International Civil Aviation Conference.

The agreements reached are intended to constitute recommended practices until September, 1945, by which time it is expected that all nations will have had time to study fully the mass of detail involved and arrive at accepted standards.

Such standards would then be enforced by an interim world aviation council, with subsidiary technical groups keeping the standards in line with new developments.

10 Classifications—The technical proposals adopted fall into ten categories—communications procedures and airways systems; rules of the air and air traffic control practices; licensing of operating and mechanical personnel and log books; airworthiness of aircraft; registration and identification of aircraft; meteorological protection of international aeronautics; aeronautical maps and charts; customs procedures and manifests; accident investigation, including search, rescue, and salvage; and publications and forms.

For transoceanic operations, the recommendations call for land airports to have at least one surfaced runway, 7,000 feet or more long and 200 feet wide, with instrument aids to final approach and landing.

It was agreed that radio navigation aids should be provided to separate air traffic, mark points on the airway, and provide references for direction finding, but specific details as to type of facilities to be used were left to the individual countries for the time being.

Standard communications procedures were adopted, but the technical equipment to be used was not fixed, "owing to the fact that wartime developments in radio may be applicable to post war civil aviation."

The proposal would require establishment
(See *Conferees*, page 143)

CAA Survey Shows Need For 3,000 Airports To Cost Billion Dollars

The Secretary of Commerce has submitted to the House of Representatives a report prepared by the Civil Aeronautics Administration which recommends a billion dollar program of Federal aid for 3,050 new airports, and 1,625 improvement projects.

The first report on the need for airports was made to Congress in 1939.

The new airports proposed include 1806 Class 1 fields, 1101 Class 2 ports, 101 Class 3 terminals, 30 in Class 4, and 12 in Class 5. Improvement projects would be divided as follows: Class 1, 303; Class 2, 699; Class 3, 349; Class 4, 213; Class 5, 61.

The report, which is in response to a House resolution, recommends that Congress authorize an appropriation not to exceed \$100,000,000 annually, for CAA aid to public agencies in the construction of air-

ports and airport buildings, and the clearing or lowering of airport obstructions.

Cost Allotment—Under the proposal, the Federal government would share costs with non-federal public agencies on a basis to be set by Congress. State or local agencies would handle construction, with work subject to inspection and approval by the CAA. Any project for which Federal aid is requested would have to meet with CAA approval as to scope of development and cost, and conform to CAA Standards for location, layout, grading, drainage, paving and lighting.

Airports intended only for private flying would get 39% of the proposed outlay, which is estimated at \$1,021,567,945, not including land or buildings. An additional \$250,000,000 would be required for land and buildings. Improvement or construction aimed at making possible extension of airline service, and in most cases simultaneously improving facilities for personal flying, accounts for 50.8% of the expenditures, while cost of work at presently designated air carrier stops would amount to 10.2%. The cost for airports, which would permit extension of air service to additional communities, is about evenly divided between the places named in pending applications for certificates and those which might subsequently be considered for service.

Expenditure for new airport facilities would be 58% of the total, while 42% would go to improvement of existing airports.

83% to Smaller Cities—Approximately 17% of the funds would be spent in communities of 50,000 or more, and the remaining 83% in communities of less than 50,000 population. The report points out, however, that as metropolitan districts complete comprehensive plans, the ratio will be altered.

The program, it is stated, could be spread over a 5- to 10-year period for completion.
(See *CAA Survey*, page 141)

Shadle Leaves CAA;

Woodmansee Acting

Webb Shadle, General Counsel for the Civil Aeronautics Administration since January 1943, has resigned effective November 25, to resume the private practice of law in Los Angeles. Glen D. Woodmansee, assistant, has been designated to act.

Mr. Shadle has been in aviation since the first World War when he was a lieutenant in naval aviation. Recently he resumed his active flying. Prior to joining the CAA he held legal posts with the California state government.

In submitting his resignation to Administrator T. P. Wright, Mr. Shadle wrote: "This step is taken with genuine reluctance, but inasmuch as I accepted a war position and the organization is now turning to post-war work, I feel I should return to private practice."

In accepting the resignation, Mr. Wright wrote, "Your valuable contribution to the CAA's part in the war effort will not be forgotten by your associates, and I am sure will prove a most pleasant memory."

Mr. Woodmansee, the acting General Counsel, after obtaining his law degree from the University of Utah, engaged in the general practice for nine years in the State

Possibilities of Actual Airbrake For Planes Studied By Engineers

Every form of locomotion, except flying, relies wholly on the element, in which or over which the conveyance moves, to retard speed.

An actual airbrake, not one operated by air, but one which utilizes air resistance, has long been an aviation problem and it is discussed in the following article prepared by John C. Morse of the Civil Aeronautics Administration's Division of Aircraft Engineering.

Controls are, of course, in use today. For this purpose both flaps and wheel brakes are used but both of these types of controls are limited in their application and effectiveness.

Wing flaps are limited in their application as brakes because they require a high forward speed of the airplane to be effective. Furthermore, flaps that produce enough drag to effect braking usually cause buffeting.

Retard Glide Only—They may, however, be satisfactorily used to retard an airplane during a glide, but have little or no effect in braking the airplane during the landing run. Wheel brakes are also limited in their application because this type of control is, of course, useless until the airplane has made contact with the ground. Even then their effectiveness is limited as every automobile driver knows who has ever driven on wet or icy streets.

To overcome these difficulties, and to effect more positive braking under all conditions, an innovation is being incorporated in some of the more modern types of propellers. This innovation has resulted in increasing the pitch range of a variable pitch propeller sufficiently so that the blades can assume a negative angle and the rotating propeller produces negative thrust. This type propeller is referred to as a reversible propeller even though the direction of the rotation is not changed.

Idea Not New—The conception of this type propeller is not new. It was, from the first, recognized however that for real usefulness as a brake such a propeller must be capable of being shifted into and out of reverse pitch almost instantaneously at the will of the pilot. Such a rapid pitch change prevents the engine from over speeding without throttling while the propeller blades are passing through zero pitch and permits the pilot to return the propeller blades to normal pitch in case he wishes to continue flight. It must be realized that any use of a reversed-pitch propeller as a brake during flight will require considerable pilot skill. It is already recognized that the speed of the airplane must be kept above the stalling speed. However, little is yet known regarding the effect on longitudinal and lateral stability and control, or what pilot technique will be required to overcome any undesirable effects that may result.

Aid to Bombers—It is foreseen that such a fast reversing propeller will be invaluable for many types of operation. A fighter pilot upon approaching his target can retard his airplane by use of a fast reversing propeller, and obtain longer firing time. Also a pilot of a heavily loaded airplane can land at increased speed and satisfactorily use fast reversing propellers for brakes. In this latter application, investigations indicate that while wheel brakes decrease the landing run to two-thirds of the distance required when no wheel brakes are used, the reversible propeller is capable of decreasing the landing run to less than one-third of that distance.

Reversible propellers are very useful for

maneuvering a flying boat on the water. Those boats can be turned in a relatively small area by reversing the propellers on one wing to produce negative thrust while operating the propellers on the other wing in the normal positive thrust position.

Propellers of the type which can be reversed almost instantly are not essential for flying boat installations but may be very useful where the landing area is limited. With a propeller that reverses slowly, extreme care must be exercised to throttle the engine during the reversing operation to prevent any over speeding that may throw a blade or damage the engine.

With the interest now being shown in reversible propellers, it is believed that several different types of these propellers will be used shortly in many installations.

Records Runway Data

Recording of take-off and landing characteristics of airplanes is greatly simplified by specialized cameras and analyzing instruments developed by the Civil Aeronautics Administration.

Use of motion pictures is not new as a means of determining speeds, accelerations, ground distances and flight paths in establishing necessary runway lengths, and the newly developed equipment greatly enhances the efficiency of the method by increasing the precision of the operation and decreasing the element of human error.

The camera equipment was developed by the Bell and Howell Co. of Hollywood and its automatic operation insures absolute uniformity of data. Used in conjunction with the camera is an analyzing projector and a wind indicator. The analyzer was developed by the W. & L. E. Gurley Co., Troy, N. Y., and the wind indicator was supplied by The Electrical Speed Indicator Co., Cleveland, Ohio. All the instruments are obtainable from the firms named.

More detailed information is obtainable from the Aircraft Development Section of the Technical Development Division.

Route Extensions Authorized

The Civil Aeronautics Board authorizes the following route extensions:

American Airlines route No. 23 from Nashville, to Oklahoma City, via Tulsa. It also authorized American Airlines to extend route No. 4 from El Paso, to Tulsa via Oklahoma City. American is also authorized to serve Joplin, on route No. 30. In the same decision Braniff Airways was authorized to extend route No. 15 from Oklahoma City to Memphis, via Tulsa and Muskogee, and Fort Smith and Little Rock. Chicago and Southern Air Lines was authorized to serve Little Rock, on route No. 53 between Pine Bluff and Memphis. It had been serving on a temporary basis.

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Jesse H. Jones,
Secretary of Commerce

T. P. Wright,
Administrator of Civil Aeronautics

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INFORMATION
AND STATISTICS

Special CAB Committee Studies Multiple Tax Burden of Air Carriers

Multiple taxation of air commerce and possible means for lightening the burden were discussed by an advisory committee named by the Civil Aeronautics Board at a two-day session held in Washington.

Special attention was devoted to consideration of the alternative avenues of Federal and state action to eliminate the onerous weight imposed on air carriers by the present tax. The session was presided over by Oswald Ryan, member of the Board.

Composition of Committee—The members of the advisory committee were appointed from the airlines, state and local tax administrations, Federal Government, universities and tax associations.

Those present were Professor Roy Blakey, University of Minnesota; Roy Blough, Treasury Department; J. C. Collins, Mid-Continent Airlines; Amos Culbert, American Airlines; I. M. Labovitz, Bureau of the Budget; R. G. Lochiel, Pennsylvania-Central Airlines; Edward Logan, Director of the Budget of the State of Pennsylvania; James W. Martin, Professor of Economics and Director of the Bureau of Business Research, University of Kentucky; Joseph McGoldrick, Comptroller, New York City; Albert Noonan, National Association of Assessing Officers; Dixwell Pierce, State Board of Equalization of California; Prof. Carl Shoup, Columbia University; W. H. Wallace, State Tax Commission of Mississippi; George Watson, Executive Director, Federation of Tax Administrators; and Ronald Welch, Bureau of Internal Revenue.

Proposals discussed ranged from the assumption of full tax jurisdiction by the Federal Government to the enactment of a simple statutory declaration by Congress that the States should cooperate in devising methods to avoid burdensome taxation.

No Final Decision—No attempt was made to formulate final recommendations to the Board. It was the consensus of the Committee that the better solution would probably be found in some form of Federal-State

(See Multiple Tax, page 142)

CIVIL AERONAUTICS JOURNAL

Back With CAA



William S. Moore

William S. Moore, who returned to Civil Aeronautics Administration in September from the Flight Control Command of the Army Air Force, has been appointed Chief of the General Inspection Division, the CAA announces.

Moore left the CAA two years ago to go on active duty with the Air Force. At that time he was Chief of the General Inspection Branch of the Seventh Region. In the first World War, he went through the Officer's Training Camp, the Signal Corps, and was detailed to the 28th Pursuit Squadron of the AEF, stationed at Issoudon, France, between 1917-18. He came out of the war a 1st Lieutenant, and was a Captain in the Reserves after 1928.

Paul E. Young, who has been Acting Chief of the General Inspection Division, will now serve as assistant to Moore.

Railey Now Air Attache; Succeeded by Sherman

Captain John Sherman, Cleveland, Ohio, has been appointed liaison consultant to the Civil Aeronautics Board.

Captain Sherman was honorably discharged from the U. S. Army Air Corps in which he served as a pilot both in the United States and in foreign service. For a time he flew the "Over-the-Hump" route between Calcutta and Chungking. Prior to entering the service Captain Sherman was a co-pilot for Pan American Airways on the route between Miami and South America. After obtaining his bachelor's degree from Yale University he graduated from the Law School and practiced law for five years in Cleveland.

Captain Sherman fills the position vacated by the appointment of Howard B. Railey, named Civil Air Attache to the American Embassy in Paris. He will go to Paris soon.

Defense Plants Corporation Takes Over Disposal of Airplanes Declared Surplus

Sale of aircraft declared surplus by the armed services has been taken over by the Defense Plant Corporation, a subsidiary of the Reconstruction Finance Corporation. Announcement of the severance of the Civil Aeronautics Administration from the domestic disposal program was made by Jesse H. Jones, Secretary of Commerce, Nov. 1.

With the ending of a portion of the CAA War Training Service program last January a procedure for the disposal of training planes was set up and began operation in April. At that time there were some 5,000 training planes to be disposed of. Virtually all have been sold.

CAA Formulates Plan—In July the CAA formulated a plan for disposal of service planes declared surplus and submitted it to the DPC. Since that time about 12,000 surplus service planes have been put on sale, and up to Nov. 1 the CAA had assisted in the disposal of slightly more than 1,000.

This change in procedure does not involve any change in sales policy. Planes offered for sale will be available for purchase at OPA ceiling prices or on sealed bids. All inquiries with reference to location, description of aircraft, and conditions of sale should be referred to the nearest Reconstruction Finance Corporation Regional Office, Surplus War Property Division.

Regional Offices—**ATLANTA REGION**—Georgia, Alabama, Tennessee and Florida. Healey Building, Atlanta 3, Ga., M. E. Everett, Manager.

BOSTON REGION—Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island. 10 Post Office Square, Boston 9, Mass., John J. Hagerty, Manager.

CHARLOTTE REGION—North Carolina, South Carolina. 109 West Third St., Charlotte 1, N. C., John A. Campbell, Jr., Manager.

CHICAGO REGION—Illinois, Indiana, Iowa. 208 S. LaSalle St., Chicago 4, Ill., B. A. Mattingly, Manager.

CLEVELAND REGION—Ohio, West Virginia. Federal Reserve Bank Bldg., Cleveland 1, Ohio. J. A. Fraser, Manager.

DALLAS REGION—Texas (northern and western parts). Cotton Exchange Building, Dallas 1, Tex., L. B. Glidden, Manager.

DENVER REGION—Colorado, New Mexico. Boston Building, Denver 2, Colo., Ross L. Hudson, Manager.

DETROIT REGION—Michigan (except upper peninsula). 607 Shelby St., Detroit 26, Mich., Arthur I. Flushman, Manager.

HOUSTON REGION—Texas (southeastern part). 723 Main St., Houston 2, Tex., W. I. Phillips, Manager.

KANSAS CITY REGION—Kansas, Oklahoma. Federal Reserve Bank Bldg., Kansas City 6, Mo., Albert L. Strong, Manager.

LOS ANGELES REGION—Arizona, Southern California. Pacific Mutual Building, Los Angeles 14, Calif., Hector C. Haight, Manager.

MINNEAPOLIS REGION—Minnesota, Wisconsin, North Dakota, South Dakota, Michigan (upper peninsula). McKnight Building, Minneapolis 1, Minn., China R. Clarke, Manager.

NEW ORLEANS REGION—Louisiana, Mississippi. 837 Gravier St., New Orleans 12, La., George W. Robertson, Manager.

NEW YORK REGION—New York, New Jersey. 33 Liberty St., New York 5, N. Y., Thomas J. Ahearn, Jr., Manager.

OMAHA REGION—Wyoming, Nebraska. Woodmen of the World Bldg., Omaha 2, Nebr., Herbert S. Daniel, Manager.

PHILADELPHIA REGION—Pennsylvania, Delaware. 1528 Walnut St., Philadelphia 2, Pa., E. Raymond Scott, Manager.

PORTLAND REGION—Washington (eastern half and southwestern part), Idaho, Montana, Oregon. Pittock Block, Portland 5, Oreg., William Kennedy, Manager.

RICHMOND REGION—Maryland, Virginia, Washington, D. C. Richmond Trust Bldg., 7th and Main Sts., Richmond 19, Va., W. B. Cloe, Manager.

ST. LOUIS REGION—Missouri, Kentucky, Arkansas. 407 North Eighth St., St. Louis 1, Mo., B. Glenn Gullede, Manager.

SAN ANTONIO REGION—Texas (southern part). Alamo National Building, San Antonio 5, Tex., L. C. Andrews, Manager.

SAN FRANCISCO REGION—Nevada, Northern California. 200 Bush St., San Francisco 4, Calif., John S. McCullough, Jr., Manager.

SALT LAKE CITY REGION—Utah. Dooly Building, Salt Lake City 1, Gerald L. Leaver, Manager.

SEATTLE REGION—Washington (western half with exception of Clark, Cowitz, Klickitat, Skamania, Wahkiakum Counties), Alaska. Dexter Horton Building, Seattle 4, Wash., Richard M. Price, Manager.

Radio Antenna Design Discussed by Engineer

An article on "Antenna Design for Field-Strength Gain" by H. W. Kohler, Civil Aeronautics Administration Radio Development Section, is carried in the October issue of the Proceedings of the I.R.E.

In the article Mr. Kohler makes an analysis of obtainable root-mean-square field strength in the horizontal plane with a given radio-frequency power fed into four identical, short vertical linear antennas which are located in the corners of a square. This field strength is compared to that produced with the same power fed into a single antenna of the same design. The resistance coupled into each antenna by the other three is computed.

A formula giving the gain in field strength for four antennas over that obtained from one antenna is derived, and families of gain curves are plotted.



Wright Points Ways Manufacturers Can Aid Airport Program

Building airplanes which will be adaptable, and acceptable, to convenient airport areas is part of the program which should be considered by the industry itself, Administrator of Civil Aeronautics, T. P. Wright, suggested in his address before the National Aviation Clinic at Oklahoma City. Two obstacles, which may be removed or lessened by the industry, were given.

One is excessive cost of areas, necessary to conform to the type of plane built today, and the other is noise. Castered landing gear wheels, which will permit a plane to make cross-wind landings and take-offs on single runway ports, will cut down area cost, he said, and regarding noise he continued: "I am emphasizing this factor because I don't think the industry is considering it as seriously as it should. These matters are a challenge to our designers and engineers."

Discusses Airport Program—Mr. Wright spoke of the proposed airport building program which he said would, within the next decade, cost almost as much as the 400,000 planes which are expected to use the airports.

Glen A. Gilbert, Chief of Air Traffic Control Division also addressed the meeting. His subject was "Fostering Aviation Through Traffic Control." He summarized his discussions by saying: "The improvements which the Civil Aeronautics Administration now has under way will, when completed, assist materially in providing a more effective air traffic control service. These improvements, however, consisting of approach control, automatic communication systems and VHF two-way radio and navigation facilities, constitute what might be called an interim program. Beyond this program steps must be taken which include:

Asks Simplification of Rules—"Simplifying rules of the air and adapting them on an international basis. Relieving pilots of distractions caused by present day traffic control requirements. Delegating to pilots substantial responsibility for the avoidance of collision between aircraft. Improving dependability and reliability of air transportation by providing an air traffic control service capable of handling traffic with a high degree of efficiency regardless of weather conditions."

Releases Available

Civil Aeronautics Administrator Wright and Glen A. Gilbert, Chief of Air Traffic Control Division spoke before the National Aviation Clinic at Oklahoma City, Okla. Mr. Wright's topic was "The Federal Program for Airport Aid and Development" and Mr. Gilbert's "Fostering Aviation Through Air Traffic Control."

"Taxation and the Future of Air Commerce," by Oswald Ryan, member of the Civil Aeronautics Board, before the Aviation Clinic at Oklahoma City.

Copies are obtainable from the CAA Information and Statistics Service, Commerce Building, Washington 25, D. C.



The CAA Journal, through its Question and Answer Column, will be glad to reply to queries from readers. Address them to Editor, CAA Journal, Reference A250, Civil Aeronautics Administration, Washington 25, D. C. Any publication may use the Question and Answer Column, in part or in its entirety. A credit to the Civil Aeronautics Administration will be appreciated.

Q—Does the Civil Aeronautics Administration give a ground school correspondence course? C. F. H.

A—No. The CAA has, however, prepared textbooks which are used in ground training instruction, and have proven very helpful. They are for sale by the Superintendent of Documents, Government Printing Office. In ordering, make remittances by check or money order, payable to the Superintendent. Do not send smooth coins or postage stamps, they will not be received and acceptable currency is at sender's risk. The list suggested follows: No. 23, Civil Air Training Manual, 65c, No. 26, Air Dynamics for Pilots, 30c, No. 27, Pilot's Airplane Manual, 30c, and No. 28, Pilot's Powerplant Manual, 75c.

Q—(1) Is it necessary to know how to weld to pass an examination for aircraft mechanic certificate? (2) Can a person other than a CAA inspector be designated to give examination for mechanic certificate? W. S. M.

A—(1) Yes. Full details are contained in CAM 18 obtainable from the Superintendent of Public Documents, Government Printing Office, Washington, D. C., price 50 cents. (2) Yes. When necessary to expedite certification, special examiners are named.

Q—A properly certified private pilot is practicing flying on instruments with an instrument check pilot. In which of the following columns of his log book should this time be logged? L. C.

A—Instrument Flight and Solo Flight. The fact he is accompanied by an instrument check pilot has no relation to solo time. Inasmuch as there is no Link Trainer column in the log book this time should be included as a note.

Q—(1) What are the penalties for an instructor who gives spin instructions without parachute equipment? (2) What are the penalties for an instructor who logs more dual time for a student than has been actually given? J. M. M.

A—Both are infractions of Civil Aeronautics Regulations and penalties are determined upon a basis of facts developed by investigations.

Q—(1) Are non-scheduled (charter) air carriers required to apply for an air carrier operating certificate if they operate interstate? (2) Where can application forms covering non-scheduled operations be obtained? (3) Are non-scheduled air carriers in interstate commerce subject to Economic Regulations? (4) Where can copies of these regulations be obtained? (5) Are non-scheduled air carriers in interstate commerce required to use standard forms for operations, maintenance, uniform system of accounts and the like? (6) Where may

A—(1) Non-scheduled (charter) operating air carriers are not required to apply copies of these standard forms be obtained? W. F. B.

All-Direction Radio Range Is Developed By CAA Technicians

Static-free very high frequency radio ranges, which register the bearing of an airplane on an instrument in the cockpit, have been developed by the Technical Division of the Federal Airways Service of the Civil Aeronautics Administration, and are now going through final testing. Demonstrations are being given to airline pilots and officials at the CAA Experimental Station in Indianapolis, and further refinement is in progress.

Equipped for Voice—The new range will send signals in all directions from the station, in comparison with the present low frequency range which sends out only four courses. The new range is also equipped for voice, as is the old, but has the advantage of being practically free of static which currently makes reception of signals unintelligible under certain conditions.

In actual flight, the pilot can select any desired compass course by setting a pointer on a 360 degree compass type dial. So long as he maintains the course, the vertical pointer on another dial—usually the standard cross-pointer instrument used for instrument landing—remains centered. Deviations are indicated to right and left up to 10 degrees maximum on the dial.

Should the pilot get far off course, despite continual instrument indication of his flight path, he can determine immediately his bearing to any station within receiving range by centering the vertical pointer and reading the bearing on the scale of degrees.

Range 50 to 100 Miles—The new VHF ranges will have a distance range of 50 miles at 1,000 feet, increasing to 100 miles at 10,000 feet. Results obtained in the development of the range have been so promising that the CAA has designed the VHF ranges now being installed so that they can be converted to the new type easily and inexpensively.

This type of air navigation facility makes it possible for the private pilot of a small airplane, with inexpensive, light-weight radio receiver to navigate by radio anywhere in the country without extensive training.

for an air carrier operating certificate for interstate operations. (2) Information concerning air carrier operating certificates may be obtained from the Chairman's office, Civil Aeronautics Board, Washington, D. C. (3) Under the Board's order temporarily exempting non-scheduled operations from certain provisions of Title IV of the Civil Aeronautics Act of 1938 (Economic Regulation 292.1) the Board has exempted non-scheduled operating air carriers from all regulations with the exception of the provisions of sub-section (L) of section 401 of the Act and to the reporting requirements of section 407 of the Act. (4) Copies of the Economic Regulations may be obtained from the Civil Aeronautics Board, Washington, D. C. (5) Under the Board's exemption of non-scheduled operators mentioned above, such air carriers are not required to use standard forms for operations, maintenance, uniform system of accounts, etc. (6) Copies of the standard forms may be obtained from the Civil Aeronautics Board, Washington, D. C.

95 of 96 CAA Pilot Training Contracts Settled In 4 Months

Settlement of a group of nation-wide pilot training war contracts of the War Training Service by the Civil Aeronautics Administration Contract Termination Board has been completed in four months during which the members of the Board flew 22,000 miles, inspected training centers, and dealt with 75 contractors. Ninety-six contracts were involved and 95 were settled.

During the trip all CAA regions in continental United States were visited by the Board.

Selecting two contracts for experiment, the Board, headed by L. W. Lawrence, CAA's Contract and Service Officer, chairman of the Board, worked out a procedure by which they later settled one contract a day, flying between stops to reduce expense and save time.

Contractor Helps—Their handling of the first experimental contract settlement was so agreeable to the flight contractor that he sent all other contractors a mimeographed letter, telling them to expect quick, just and satisfactory treatment from the Board, advising them also of the Board's thorough businesslike methods, a letter that materially helped in all later negotiations.

The contractors affected were those who had been training instructors in the War Training Service Pilot Training Program when the Army ordered all such training stopped as of January 15, 1944. Thus the Government breached the contracts, many flight operators were left with no business, and some of the training centers became mere ghost towns, especially those which had been moved into the deserts from the restricted area along the West Coast.

Anxiety Allayed—Following the abrupt suspension of the work, there was much uncertainty and anxiety among these war contractors as to what adjustments the CAA could or would make. The first hearing answered that question.

The 75 contractors had presented claims totalling more than \$3,500,000. They settled for about \$1,600,000. Almost all of them expressed satisfaction with the settlements. Only once did the Board and the contractor fail to agree and that contractor had appealed to the Administrator of Civil Aeronautics for reconsideration of his claim.

In Lawrence's party were W. G. Stewart, Assistant Director of WTS, who served as policy advisor; John P. Mifflin, Chief of Operations Division, WTS, who was pilot and technical advisor; and several accountants who, at various times included Lewis N. Bayne, Chief Accountant, A. D'Arcy Harvey, economist, Frank D. Holland, examiner, and also Pasquale Vacchio, secretary. They flew a four-place Beechcraft and a Spartan Executive.

Hangar Becomes Factory—Many interesting incidents marked the negotiations. One contractor had transferred a hangar into a factory and was preparing to begin work on a war contract of over \$800,000. Another had turned a quarters building into a cafeteria and was doing a prosperous business. Although the cost of leasehold improvements, so utilized, could not be allowed as proper claims against the Gov-

(See Contracts, page 143)

List of CAA Publications Ready for Distribution

A compact and comprehensive list of Civil Aeronautics Administration publications has been compiled for distribution to persons and organizations interested in aeronautics.

Most of the material described may be obtained without charge, but a few are for sale by the Superintendent of Documents, Government Printing Office. These are designated by "GPO" together with the price.

The publications cover a wide field and include the Civil Aeronautics Administration Journal, official organ of the CAA, in which actions of the Civil Aeronautics Board are carried together with articles from authoritative sources on aviation and related subjects. The Journal is for sale by the Superintendent of Documents. The domestic yearly subscription price is 50c and the foreign 75c.

The items in the publications list are in categories such as Airports, Aircraft Engineering, Airways, Civil Aeronautics Manuals, Flight Engineering, Regulations of the Administrator, Technical Development, Training and others which do not fall in any special classifications which are listed as Miscellaneous, Civil Air Regulations, promulgated by the Civil Aeronautics Board, are as follows: Aircraft, Airmen, Air Carriers, Air Agencies, Air Navigation and Miscellaneous.

The booklet, entitled "Civil Aeronautics Administration Publications," may be obtained from the CAA Information and Statistics Service, Washington, D. C. It will be valuable to librarians and others interested in aviation.

CAA Survey

(Continued from page 137)

This depends in part on the time required by the States to comply with the proposed conditions for participation, which include the establishment and empowering of an official body to conduct the State share of the program; State legislation adequate for the clearing and protection of airport approaches; and provision for proper maintenance and operation of airports within the State.

The report lists the communities in which the proposed projects would be located, specifying present and proposed class, and estimated cost by type of work. The exact sites within each community have not been determined, and one of the recommendations calls for an immediate appropriation to the CAA of \$3,000,000 for further preparatory work "in order that an adequate airport construction program may commence immediately after appropriation for construction is enacted."

County Coverage—Only 1,629, or 53%, of the 3,047 counties in the United States have one or more landing areas, the report points out. Under the proposed program, county coverage would be increased to 88%, with one or more airports at 5,269 locations in the United States, against 2,585 places today.

Although the greatest increase in number of airports is proposed for towns of less than 5,000, the report makes the point that "every airport built to serve the 76,000,000 people living outside metropolitan areas will also provide landing place for the 55,436,568 people in the metropolitan districts."

It also calls new small airfields in the cities a necessity, citing the fact that there are 438,585 persons per airport in cities of more than 500,000.

A breakdown of cost estimates by type of work shows that \$525,304,322, or 51.4% of the total, would go for preparation of the site. Another \$395,305,460, or 38.7% of the total, is the estimated cost of paving. Lighting would take 5.4%, or \$55,081,978. Radio equipment and installation would amount to \$10,983,000, or 1.1%. Miscellaneous items such as approach clearing would take \$34,893,185, or 3.4%.

State summaries follow:

State	No. Improvement Projects	No. New Fields	Total Cost
Ala.	27	35 ¹	\$12,185,000
Ariz.	15	44 ¹	10,935,140
Ark.	25	65	35,109,634
Calif.	137	174	56,912,500
Colo.	31	36	12,178,000
Conn.	11	26	16,350,000
Del.	7	11	2,684,000
D. C.	—	—	—
Fla.	48	57	23,724,630
Ga.	17	50	9,310,000
Idaho	28	23	9,085,300
Ill.	55	105	40,076,000
Ind.	28	68	16,032,000
Iowa	28	80	9,951,500
Kans.	42	76	7,732,000
Ky.	14	76	7,865,000
La.	35	63	40,617,890
Me.	24	64	19,565,000
Md.	7	4	14,065,000
Mass.	26	35	29,931,000
Mich.	80	92	22,813,000
Minn.	36	114	11,736,000
Miss.	22	51	10,740,000
Mo.	32	71	18,923,000
Mont.	52	24	10,473,100
Nebr.	37	54	8,824,000
Nev.	24	30	4,752,100
N. H.	14	25	14,934,000
N. J.	24	59	31,968,780
N. Mex.	28	32	33,016,594
N. Y.	60	129 ¹	58,590,895
N. C.	34	55	19,776,000
N. Dak.	18	55	3,842,000
Ohio	77	129	31,161,000
Okl.	43	89	37,300,440
Oreg.	22	33	6,579,000
Pa.	76	131	46,667,000
R. I.	7	11	5,069,000
S. C.	12	40	12,837,000
S. Dak.	14	26	4,730,500
Tenn.	29	55	13,142,000
Tex.	123	213	120,923,152
Utah	19	54	12,120,790
Vt.	10	25	12,867,000
Va.	30	103	23,239,000
Wash.	37	42	20,158,000
W. Va.	12	73	28,649,000
Wis.	33	81	17,944,000
Wyo.	24	10	3,472,000
Total	1,625	3,080	\$1,021,567,945

¹Includes airports under construction by other agencies.

Survey Shows Average Size Airports 368 Acres

The average size of airports in the United States is 368 acres, according to statistics prepared recently by the Airport Service of the Civil Aeronautics Administration. There are more airports between 80 and 160 acres in size than in any other classification.

Several strange situations are revealed. For instance there are three Class 3 airports, each only 40 acres in extent which have runway, or runways, between 3,500 and 4,500 feet in length, and there are 9 Class 1 airports with more than 1,280 acres. There is one Class 5 airport, having runways longer than 4,500 feet, on a plot of less than 80 acres. Military as well as civil airports are included in the survey.

Tables showing details are available at the CAA Information and Statistics Service, Commerce Building, Washington 25, D. C.

Overloaded Ship Crashes—After failing to attain sufficient altitude on take-off to clear obstructions at the end of the runway, a plane crashed with resultant death to one passenger, serious injuries to another, and minor injuries to the pilot at Lockwood Airport, Frankfort, Ind.

The pilot, Loren Daniel Johnson, 54, held a private certificate and had accumulated approximately 965 hours. The fatally injured passenger, George Siddal, had a few hours of flying time but was not certificated as an airman. The seriously injured passenger was Gailford D. Harrod.

The aircraft, which was certificated to carry a maximum useful load of 545 lbs., was overloaded by 110 lbs.

Killed Stunting—Low stunt flying ended in a crash and the death of Pilot Morris Landau, 31, Dallas, Tex., and severe injury to Dr. Thomas V. Connor, 33, Beaumont, Tex., near Clearview Airport, Dallas.

Landau held a commercial certificate with land and instrument ratings, and had about 1,500 hours flying time. Dr. Connor also held a commercial certificate with land rating and had flown about 2,000 hours. Both had obtained commercial certificates after waiver of the physical requirements on eyesight.

Dr. Connor, though critically injured, said Landau was flying the aircraft at the time of the accident. The glasses of neither pilot could be found. Inasmuch as neither was wearing goggles it would have been possible for the glasses to have blown off in flight. If this had occurred, the vision of both would have been impaired.

The probable cause of the accident was failure to successfully pull out of a steep dive while maneuvering the aircraft recklessly at an extremely low altitude.

Killed Flying Low—While flying at a recklessly low altitude, Pilot Leroy Neal Hartman crashed near Beloit, Kan., with resultant fatal injury to himself and serious injuries to his passenger, Virginia Lee Eaton, 18, of Downs, Kan.

Hartman, 48, of Hays, Kan., held a private pilot certificate with a single-engine land rating and had accumulated approximately 391 hours of flying time.

The manner in which the propeller was broken indicated that power was being developed at the time of impact. Miss Eaton said they were flying "very low." It was reported that Hartman was not a man who ordinarily indulged in acrobatic flying.

The probable cause of this accident was loss of control of the aircraft during reckless flying at a low altitude.

Student Pilot Injured—Pilot Dorothy L. Nett, 26, of Detroit, Mich., was seriously injured when she spun in and crashed at Birmingham, Mich. Miss Nett held a student pilot certificate and had flown approximately 4 solo hours, all in the type plane involved.

The pilot stated she had just executed a power-off stall at 3,000 feet and that when she gave the engine full throttle, it did not respond and fell into a spin from which she could not effect recovery. However, witnesses did not substantiate this sequence of events.

Investigation disclosed that the engine had not been functioning properly. Examination

tion of the engine after the accident revealed that the exhaust valve in the No. 4 cylinder was sticking badly and that all other valves had a tendency to stick.

The probable cause of this accident was failure to recover from a spin, for reasons undetermined. The pilot's lack of practice in spin recovery in the type aircraft involved may have been a contributing factor.

Girl Pilot Killed—Margery Merle Humphrey of Central Valley, Calif., was fatally injured when the aircraft she was piloting spun to the ground near Hubbard Field, Reno, Nev. Miss Humphrey held a student pilot certificate and had flown about 19 solo hours.

The only known witness stated that he first observed the plane in a spinning attitude about 500 to 750 feet, and it continued to spin until it struck the ground. The sloping terrain was covered with large boulders and an emergency landing could not have been effected safely.

The probable cause of this accident was a stall and spin at low altitude during an attempted landing following partial loss of power. A contributing factor to the accident was inadequate maintenance.

Stalled Plane Falls—A stall at low altitude while attempting to land resulted in serious injury to William Brisch at Cram Field, Davenport, Iowa. Brisch held a student pilot certificate and had flown approximately 972 solo hours.

Evidence indicated that the pilot's flying time had been accumulated over a number of years; that he had flown only three hours in the last 90 days and had not been checked out on the aircraft he was flying. The manner in which the propeller was shattered indicated that some power was being developed at the time of impact.

3 Killed in Snow Crash—A cross-country flight into a snowstorm ended in an accident near Ann Arbor, Michigan, causing fatal injuries to Pilot Enoch Allen Dillon, 39, of Tacoma, Wash., and passengers Robert Burke and Richard Ford, both of Berrien Springs, Mich.

Pilot Dillon held a commercial certificate with single-engine land and water and instrument ratings. He had flown approximately 3,000 solo hours. His only known instrument time was 22 hours acquired during an instrument course taken in 1943.

It is believed that the flight encountered an extremely heavy snow squall at low altitude as it neared Ann Arbor and with the existing temperature and dew point, the aircraft might have picked up some ice.

The probable cause of this accident was action of the pilot in continuing flight into adverse weather, during which he lost control of the aircraft.

Hit by Taxiing Plane—Lyle Childs, 20, tractor operator at Bishop Airport, Flint, Mich., was seriously injured when he was hit by the wing of a taxiing aircraft piloted by Max L. Partridge, 26, of Flint.

Partridge held a commercial certificate with single-engine land, flight instructor and instrument ratings. He had flown about 3610 hours. He and his two passengers, J. C. Brayten and Wayne Zartman, both of Flint, were not injured.

The combination of lowered fuel pressure

and the aircraft approaching against traffic undoubtedly influenced the pilot in allowing his attention to be diverted.

Killed by Propeller—Bernard Nikkel, 62, of Joes, Colo., was killed on his farm near Joes when struck by the revolving propeller of an aircraft piloted by his son, William Nikkel, 31, who held a commercial certificate with flight instructor and instrument ratings and had 1400 hours of flying time.

The pilot displayed poor judgment in permitting a person inexperienced in the operation of aircraft to remove obstructions which were close to the propeller.

Maneuvers Too Close to Ground—Reckless low flying resulted in a crash and minor injury to Pilot Hiel X. Campbell, Jr., 30, of Palestine, Tex., and serious injuries to his passenger, Thomas Louis Portwood of Camp Claiborne, La., at Palestine, Tex. Airport. Campbell held a student pilot certificate and had flown approximately 44 solo hours, including 25 hours in the type aircraft involved. Portwood was not certificated as an airman.

The probable cause of this accident was a stall from which recovery was not effected while the pilot was executing unnecessary maneuvers close to the ground.

Crashes on Takeoff—While attempting a take-off in a fully loaded aircraft from a field 7550 feet above sea level, Pilot Julien Verne Lincoln crashed with resultant serious injuries to himself and minor injuries to his passenger, John M. Clark, both of Dallas, Tex. The crash occurred near the Municipal Airport, Alamosa, Colo.

Lincoln, 52, held a commercial pilot certificate with a single-engine land rating. He had logged approximately 425 solo hours. Clark was not certificated as an airman.

Lincoln stated that the engine functioned normally and it was his opinion that the accident was due to his inexperience in flying at such a high elevation. The aircraft was loaded to within 10 lbs. of its approved maximum weight. It was reported that the runway used was soft which might have lengthened his take-off run.

Multiple Tax

(Continued from page 138)

cooperation and Congressional action might be required to accomplish an equitable apportionment of property, income gross receipts or capital stock of the airlines among the states for tax purposes.

Some members of the Committee favored a Federal law prescribing a definite allocation formula; others held the responsibility for making suitable allocations should be delegated to an existing Federal agency; and others favored the creation of a new Federal-State body which would be fully representative of the states.

Opposed to Fuel Tax—Many members expressed grave fears the present method of taxing aviation fuel by states would lead to burdensome and unequal taxation among the states and urged consideration be given to a program of exclusive Federal taxation of aviation fuel.

The advisory committee adjourned to continue its study of the problems of multiple taxation of air commerce. No date was fixed for a future meeting.

Tax Problems of Airlines Discussed by O. Ryan

"Taxation and the Future of Air Commerce" was discussed before the National Aviation Clinic at Oklahoma City by Oswald Ryan, member of the Civil Aeronautics Board with especial reference to the multiple levy imposed by states in which lines operate.

The decision of the Supreme Court in May in the case of Northwestern Airlines versus Minnesota was reviewed and both affirmative and dissenting opinions reviewed.

The prevailing opinion, affirming Minnesota's right to levy a tax on an Airline's entire fleet, even though only 14 percent of the route mileage was within the state of Minnesota, was written by Justice Frankfurter and Justice Black in a separate concurring opinion.

The diversity of views, said Justice Black, "illustrate the difficulties inherent in the Judicial formulation of general rules to meet the national problems arising from state taxation which bears, in incident, upon interstate commerce. These problems, it seems to me, call for Congressional investigation, consideration and action."

Conferees

(Continued from page 137)

of air traffic control centers for areas of heavy traffic to be determined by the contracting states or an international body.

Tentative standards of competency for student, private, commercial, and airline transport pilots, and for mechanics were recommended. A minimum of 200 solo hours of experience was stipulated for third class airline transport pilots, who would be entitled to serve as first pilots on day flights in "contact" weather of passenger aircraft requiring only one pilot. This represents a modification of the original U. S. draft to avoid an unduly onerous requirement for some of the smaller operating companies.

International Code Proposed—The subcommittee on airworthiness expressed the hope that "the work so auspiciously commenced at Chicago will finally result in an international code of airworthiness which, for the purposes of international commerce, will make reference to the several differing national codes unnecessary."

Anticipating great increases in the number of aircraft after the war, the subcommittee on Aircraft Registration and Identification Marks recommended that an unlimited number of letters or digits be used for aircraft markings. The 1919 International Convention on Air Navigation had provided a maximum of five letters including one or two letters designating the country. For a country with a two-letter national symbol, this allowed a maximum of about 17,000 identifications.

Weather stations in isolated polar and equatorial regions and weather ships stationed at strategic points on the oceans were among the proposals agreed upon by the subcommittee dealing with meteorological protection of international aeronautics.

International Search and Rescue Posts should be established in areas not otherwise served, particularly in areas difficult of access, it was proposed.

Rate Floors Probable—In the political-economic phase of the conference, complete agreement had not been reached as this issue of the CAA JOURNAL went to press, but it appeared probable that one outstanding

400 Airways Jobs For Veterans; Pay, \$2,433

CAA To Aid Trainees

Jobs as Aircraft Communicators for the returned serviceman who has had some communications or aviation experience, and for other similarly qualified men and women eager to help in the war effort, have been announced by the Civil Aeronautics Administration. Veterans will be given first preference.

Between 300 and 400 such jobs are open, and the CAA has arranged for an intensive training course of six weeks, during which the trainee will receive pay at the rate of \$2,190 a year. Upon completion of this training, the first class will be assigned to jobs in the field at the rate of \$2,000 a year, which, with government overtime pay, amounts to \$2,433. When the second class has completed its six weeks of training, members of the first class are scheduled to return to the training centers for additional instruction before receiving permanent assignments.

Aircraft Communicators work in CAA Airway Communications Stations at landing areas throughout the United States and Alaska, and provide airmen with the information and communications necessary for safe flight. Since the traffic on the airways is now 85% military, the job is definitely war work.

Training classes opened at each of seven CAA Regional Offices on November 20 and November 27. These offices are at New York, Atlanta, Chicago, Kansas City, Fort Worth, Santa Monica and Seattle. Detailed information is available at any United States Employment Service office, at Civil Service offices and CAA offices.

product would be the establishment of regional airline operators' conferences to place floors under rates for international traffic.

The general feeling also seemed to be that whatever organizations are set up, they would have to achieve their aims by providing a series of instruments for conciliating minor differences in the light of common interest in the development of world aviation, rather than by using force as in the case of the security organization.

Chief unsettled problem as the conference entered its fourth week was the extent to which international traffic should be allocated among the interested nations.

At the start of the conference, there were three views on this question. The United States put forward the opinion that there should be unlimited schedules on the basis of free competition. The British called for a quota system. Canada offered the "escalator" idea, by which, after an interim period, airlines would automatically obtain additional schedules as their load factor reached 65%.

All nations present agreed to two "freedoms of the air"—the right of innocent passage, and the right of technical stop for refueling, service, and the like. Many governments are expected to ratify the "five freedoms" document, which grants the additional rights to land passengers, mail and cargo from the country of origin, pickup loads returning to the country of origin, and pickup loads at intermediate points on long range flights.

Ask Comment on Change on Proposed CAR Part 41

The Civil Aeronautics Board asks general comment on a proposed Part 41 of the Civil Air Regulations dealing with the operation of scheduled American flag air carriers outside the continental limits of the United States.

The basic regulations for such air carriers have been under consideration by the Board for some months. "And the need for such regulations has become much more imperative due to the prospective end of the war, and the anticipated great increase in international transportation."

In formulating this Part the Board has followed its announced policy of simplification, and every effort has been made to provide flexibility in the regulations which, while providing for adequate safety, will not handicap or impede United States flag carriers in their international operations.

The Board has requested written comment on this Part on or before January 1, 1945, and has expressed a willingness to hear oral argument if any person with substantial interest requests it.

Low Altitude Spin Fatal

A spin from low altitude which continued to the ground was fatal to Pilot George Warren Law and his passenger, Henry W. Mariani, in an accident near Trinca Airport, Andover, N. J.

Law, 30, Nutley, N. J., held a private certificate with a single-engine land rating. He had accumulated approximately 74 hours flying time. Mariani, 37, Little Ferry, N. J., held a commercial certificate with single-engine land and sea and flight instructor ratings. He had accumulated more than 1800 hours of flying time.

Law had engaged an instructor to check his handling of the plane. The instructor found Law had a tendency to climb too steeply and to glide at too flat an angle, and suggested that Law get some more practice and instruction.

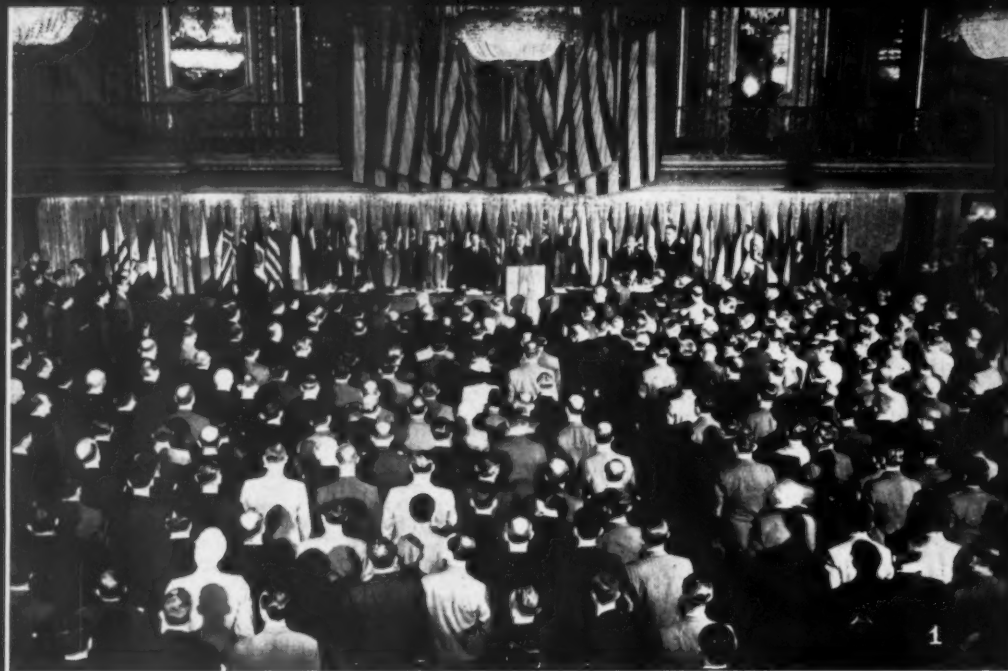
A contributing factor to this accident was the inexperience of the pilot in flying a plane of the kind involved.

Contracts

(Continued from page 141)

ernment, yet such prompt conversion demonstrated true American ingenuity and initiative. There was also the case of a contractor, seeking a market for his stock of parts and shop tools acquired for the maintenance of airplanes, and board and lodging equipment used in housing and subsistence, now no longer needed, who took advantage of the laws of scarcity and held a successful public auction.

The standard method was for the Board to visit all operators' bases in a given CAA Region, and then ask each contractor to come later to the Regional Office on a specified day for conversations. The Board sought to determine whether a profit was made, whether the profit, if any, was excessive, whether a loss was sustained and the cause, and what costs were incurred after the arbitrary cessation of the training in January. The settlements were made under the Contract Settlement Act of 1944, and are final and conclusive.



I.C.A.

Honor Paid Tec

TECHNICIANS of Civil Administration, Civil Aeronautics and Geodetic Survey, Western Hemisphere, were complimented by the International Conference, which met in Chicago, for their work in developing procedures for international flight.

CAA personnel active in the conference included Administrator Tamm, Assistant Administrator Foreign Affairs, Director of Federal Airports, Director of Federal Air Regulation, and many others. The Board representation included the Chairman and General Counsel.



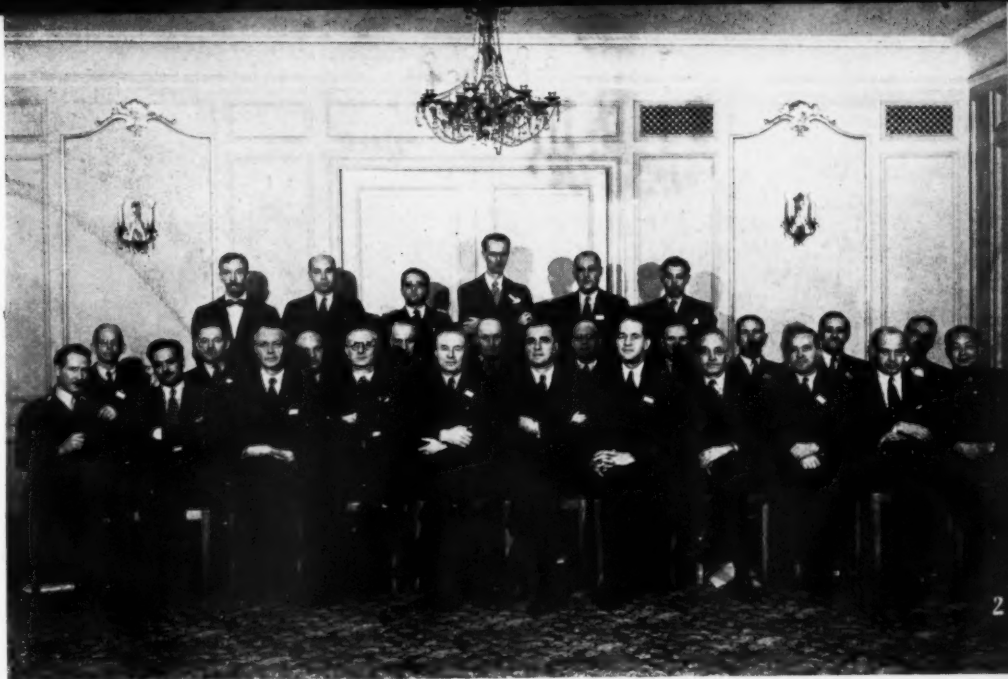
At the
Conference



A.C.

Technicians

of Civil Aeronautics Administration, Civil Aeronautics Board, Coast and Geodetic Survey, Weather Bureau were met in Chicago during November to discuss proposed standards for international flying. Participating in the conference were: T. P. Wright, the Director of Foreign Operations, the Director of Safety, and its technical experts. Also present were the Chairman, Vice Chairman and



CAA Photo

Attendance

1. Opening ceremonies.
2. Chairman, secretaries and experts of subcommittees of Technical Committee II in executive session.
3. Chairman of French delegation Max Hymans, T. P. Wright, Civil Aeronautics Administrator and Adolf Berle, Jr., Assistant Secretary of State, Conference President.
4. A. D. McLean, Canadian Technical Adviser and T. B. Bourne of CAA.
5. J. P. R. Vachon, Canadian Adviser and Fred M. Lanter of the CAA.
6. Colonel Ching-yee Liu, Chinese expert and John T. Morgan of CAA.
7. Charles Dycer, CAA Technical Expert and Czechoslovakian Delegate Frantisek Martinek.
8. Meeting of Committee on Technical Standards and Procedures.
9. Viscount Knollys, United Kingdom adviser; William A. M. Burden, Assistant Secretary of Commerce, U. S. Delegate; T. P. Wright, Conference Technical Secretary.



Domestic Air Carrier Statistics

Operations for October 1944

Operator and routes	Revenue miles flown	Revenue passengers carried ¹	Revenue passenger miles flown	Express carried (pounds)	Express pound-miles flown	Passenger seat miles flown	Revenue passenger load factor (percent)
All American Airlines, Inc., Pittsburgh-Huntington, Jamestown, Williamsport, Harrisburg, Washington..... Total	120,003	0	0	15,625	2,460,484	0	—
American Airlines, Inc., Total	3,536,155	95,720	60,108,964	2,412,211	1,163,131,865	65,839,138	91.30
Dallas-Los Angeles.....	1,114,555	21,950	20,105,102	229,251	238,860,039	21,058,425	95.47
New York-Chicago.....	566,806	23,158	9,153,396	884,319	413,017,962	9,832,156	93.10
Boston-New York.....	201,264	20,532	3,596,929	456,369	72,155,837	4,039,699	88.60
Syracuse-Cleveland.....	31,541	2,598	421,461	87,513	17,123,559	638,284	96.03
Cleveland-Nashville.....	62,486	5,179	1,228,566	99,408	24,269,944	1,303,758	94.23
New York-Fort Worth.....	1,007,069	28,331	16,626,942	420,241	279,487,927	18,283,626	90.94
Washington-Chicago.....	167,959	7,113	2,858,717	132,743	49,189,565	3,122,956	91.54
Chicago-Fort Worth.....	179,426	7,308	3,263,389	65,374	41,313,350	3,674,000	88.82
Buffalo-Toronto.....	4,256	971	73,796	2,641	200,716	88,464	83.42
El Paso or Fort Worth-Mexico City.....	200,733	3,184	2,780,636	34,262	27,512,956	3,777,710	73.61
Branniff Airways, Inc., Total	575,209	24,240	10,289,179	149,832	70,964,587	11,639,312	88.40
Chicago-Dallas.....	329,324	11,656	6,133,483	102,580	58,059,580	6,519,018	94.09
Denver-Brownsville.....	210,903	12,874	3,654,163	42,633	12,198,222	4,539,494	80.50
San Antonio-Laredo.....	34,982	2,542	501,533	4,619	706,776	580,800	86.35
Chicago & Southern Air Lines, Inc., Total	374,357	13,068	6,228,194	101,211	45,623,881	7,844,951	79.39
Chicago-New Orleans.....	309,476	11,767	5,131,156	90,615	40,145,819	6,483,440	79.14
Memphis-Houston.....	64,881	3,077	1,097,038	10,596	5,478,062	1,361,511	80.58
Continental Air Lines, Inc., Total	227,309	6,593	2,487,443	18,716	7,081,742	2,679,112	92.85
Denver-El Paso-San Antonio.....	161,905	4,907	1,786,874	14,094	5,655,434	1,919,817	93.08
Denver-Tulsa.....	33,410	1,459	347,648	2,742	733,936	389,151	89.33
Denver-Kansas City.....	31,994	727	352,921	1,280	692,372	370,144	95.35
Delta Air Corporation, Total	396,853	18,534	7,490,615	83,179	30,935,257	8,298,513	90.26
Charleston or Savannah-Fort Worth.....	325,704	14,659	6,145,944	55,759	23,130,473	6,815,519	90.18
Atlanta-Cincinnati.....	71,149	4,141	1,344,671	27,420	7,804,784	1,482,994	90.67
Eastern Air Lines, Inc., Total	1,701,511	51,811	27,623,561	584,428	312,966,462	32,365,389	85.35
New York-San Antonio or Brownsville.....	619,596	18,571	10,166,063	173,420	114,883,003	11,987,647	84.80
New York-Miami.....	626,079	19,262	9,244,985	198,786	116,859,841	11,251,454	82.17
Chicago-Jacksonville.....	286,125	12,578	5,285,812	108,780	59,123,770	5,705,987	92.64
Atlanta-Tampa.....	80,787	3,310	1,430,038	7,709	3,716,869	1,682,545	84.99
Washington-St. Louis.....	89,004	3,349	1,496,663	35,733	18,402,979	1,737,756	86.13
Inland Air Lines, Inc., Total	123,992	2,523	818,310	6,265	1,188,340	1,123,850	72.81
Denver-Great Falls.....	92,737	2,523	818,310	6,158	1,147,292	1,123,850	72.81
Cheyenne-Huron.....	31,255	0	0	107	41,048	0	—
Mid-Continent Airlines, Inc., Total	202,475	7,246	2,059,776	25,800	7,575,793	2,485,497	82.87
Minneapolis-Tulsa.....	147,785	5,405	1,503,095	21,716	6,584,069	1,806,355	83.32
Minneapolis-Des Moines-St. Louis or Kansas City.....	54,690	1,929	551,681	4,084	991,724	679,142	81.67
National Airlines, Inc., Total	394,161	10,758	4,676,731	28,756	10,843,134	5,314,788	87.99
New York-Key West via Miami.....	234,702	6,800	2,712,824	11,522	4,733,829	3,089,014	87.82
Jacksonville-New Orleans.....	159,459	5,355	1,963,907	17,234	6,109,305	2,225,774	88.23
Northeast Airlines, Inc., Boston-Presque Isle and Moncton..... Total	84,969	4,677	1,095,542	13,817	2,716,547	1,808,796	60.57
Northwest Airlines, Inc., Total	849,149	23,449	14,566,775	301,521	168,422,766	16,921,345	86.09
Chicago-Twin Cities-Seattle; Fargo-Winnipeg.....	841,517	23,449	14,566,775	300,911	168,337,806	16,921,345	86.09
Minneapolis-Duluth.....	7,632	0	0	590	84,960	0	—
Pennsylvania Central Airlines Corporation, Total	626,012	49,257	10,655,618	492,743	94,283,682	13,003,795	81.94
Norfolk-Detroit.....	433,347	37,373	7,471,430	359,329	64,374,275	8,979,858	83.20
Detroit-Milwaukee or Chicago.....	90,076	9,384	1,627,751	89,357	15,919,861	1,887,297	86.25
Pittsburgh-Buffalo.....	25,371	1,734	339,711	10,625	1,545,559	581,942	63.86
Pittsburgh-Birmingham.....	77,218	3,499	1,216,726	33,432	12,443,987	1,604,698	75.82
Transcontinental & Western Air, Inc., Total	2,148,079	41,917	36,878,455	1,341,009	724,365,740	39,491,475	93.38
New York-Los Angeles.....	1,392,005	33,159	24,510,859	731,054	488,158,834	25,797,481	95.01
Dayton-Chicago.....	52,840	3,938	942,426	66,885	15,262,157	1,069,460	88.12
Boulder City-San Francisco.....	139,827	6,711	3,316,414	48,853	19,934,442	3,349,579	99.01
Kansas City-Pittsburgh via Chicago.....	397,501	11,351	5,429,796	353,587	174,775,128	5,975,633	90.87
St. Louis-Detroit via Cincinnati and Dayton.....	68,284	4,927	1,119,305	93,075	14,804,112	1,411,013	79.33
Washington-Troy via Columbus.....	96,982	4,551	1,559,655	47,555	11,341,067	1,888,309	82.60
United Air Lines, Inc., Total	2,925,790	63,589	45,069,817	1,104,163	864,276,475	46,770,839	96.36
New York-San Francisco.....	2,246,139	32,532	31,659,678	896,828	770,921,616	32,774,924	96.60
Salt Lake City-Seattle.....	147,035	4,752	3,049,376	52,661	31,022,225	3,333,407	91.48
Seattle-San Diego.....	458,890	23,251	8,927,345	133,517	55,096,856	9,148,500	97.58
Seattle-Vancouver.....	9,650	1,300	169,800	4,142	482,658	198,048	85.77
Washington-Toledo.....	64,076	1,751	1,263,558	17,015	6,753,120	1,315,960	96.02
Western Air Lines, Inc., Total	309,716	12,525	5,625,574	83,295	37,794,922	6,324,038	88.96
San Diego-Salt Lake City.....	183,233	7,110	3,911,180	67,956	32,981,006	3,733,888	96.71
Salt Lake City-Great Falls.....	54,559	1,922	708,252	4,866	1,412,408	1,143,327	61.95
Great Falls-Lethbridge.....	10,230	677	99,163	727	108,488	209,443	47.35
Los Angeles-San Francisco.....	61,694	3,414	1,206,979	9,746	3,293,020	1,237,380	97.54
Total.....	14,595,700	425,907	235,674,554	6,762,571	3,544,651,677	261,910,838	89.98
Colonial Airlines, Inc., New York-Montreal..... Total	123,016	6,443	2,030,278	28,373	8,372,398	2,583,336	78.59
Hawaiian Airlines, Ltd., Honolulu-Hilo and Port Allen..... Total	82,082	9,487	1,376,749	620,906	95,550,407	1,488,528	92.49
Grand Total.....	14,800,798	441,837	239,081,581	7,411,850	3,648,574,482	265,982,702	89.89

¹The total passengers carried for each airline is an unduplicated figure with the exception of United whose unduplicated figure was not available.

Operations for the first 10 months of 1944 compared with the same period of 1943

Operator	Revenue miles flown January-October		Revenue passengers carried (unduplicated) January-October		Revenue passenger miles flown January-October	
	1944	1943	1944	1943	1944	1943
All American Aviation, Inc.	1,003,076	856,745	0	0	0	0
American Airlines, Inc.	27,936,984	21,931,138	762,315	665,248	466,669,181	365,603,137
Braniff Airways, Inc.	4,287,719	3,332,996	180,190	127,751	75,981,770	54,691,524
Chicago & Southern Air Lines, Inc.	2,270,725	1,835,459	84,513	69,326	39,703,972	29,551,091
Continental Air Lines, Inc.	1,921,527	1,287,003	54,776	39,543	19,284,672	12,536,358
Delta Air Corporation	2,779,258	1,876,517	132,661	88,983	52,774,871	34,751,279
Eastern Air Lines, Inc.	13,779,049	11,002,303	380,053	310,971	21,892,560	17,069,481
Inland Air Lines, Inc.	977,996	701,519	17,589	10,292	5,621,828	3,327,957
Mid-Continent Airlines, Inc.	1,855,295	1,164,927	61,812	29,658	17,757,033	8,246,401
National Airlines, Inc.	2,621,699	1,532,413	92,349	52,444	31,498,069	18,343,910
Northeast Airlines, Inc.	822,458	576,225	43,462	29,951	10,591,196	7,474,109
Northwest Airlines, Inc.	5,912,445	3,576,826	146,617	75,696	97,614,142	50,534,946
Pennsylvania-Central Airlines Corporation	4,204,280	2,511,867	334,240	191,764	73,202,517	42,599,815
Transcontinental & Western Air, Inc.	17,722,610	13,407,530	327,902	273,013	288,609,531	201,687,225
United Air Lines, Inc.	24,087,980	17,887,441	443,711	354,960	377,191,446	294,032,931
Western Air Lines, Inc.	2,458,475	1,661,447	95,489	62,441	44,898,504	26,431,867
Total	114,641,576	85,142,356	3,157,679	2,382,041	1,813,291,292	1,328,882,031
Index (1943 = 100)	134.65	100.00	132.56	100.00	136.45	100.00
Colonial Airlines, Inc.	841,864	571,456	46,473	31,058	14,410,024	9,159,014
Hawaiian Airlines, Inc.	780,426	761,224	90,898	91,139	13,056,793	12,962,987
Grand Total	116,263,866	86,475,036	3,295,050	2,504,238	1,840,758,109	1,351,004,032
Index (1943 = 100)	134.45	100.00	131.58	100.00	136.25	100.00

Operator	Express carried (pounds) January-October		Express pound miles flown January-October		Passenger sent miles flown January-October		Revenue passenger load factor (percent) January-October	
	1944	1943	1944	1943	1944	1943	1944	1943
All American Aviation, Inc.	120,898	127,724	18,119,509	17,556,819	0	0	—	—
American Airlines, Inc.	18,544,869	17,165,421	8,582,851,115	8,028,471,995	516,170,170	414,593,513	90.41	85.77
Braniff Airways, Inc.	1,046,147	1,166,380	481,724,076	589,865,117	83,520,886	59,600,573	90.97	84.05
Chicago & Southern Air Lines, Inc.	878,071	719,437	368,742,246	312,992,684	46,866,971	35,191,506	84.72	83.97
Continental Air Lines, Inc.	160,833	99,355	61,599,472	34,989,587	21,862,532	14,427,890	88.21	86.89
Delta Air Corporation	766,979	492,007	280,254,437	189,523,505	57,713,302	39,229,349	91.44	88.58
Eastern Air Lines, Inc.	4,604,615	3,666,257	2,751,342,405	2,252,349,462	245,024,257	205,755,335	86.48	87.03
Inland Air Lines, Inc.	40,128	21,275	8,088,100	5,063,658	7,818,609	5,057,410	71.90	65.80
Mid-Continent Airlines, Inc.	202,718	146,009	54,828,687	35,366,813	22,958,800	13,062,060	77.34	63.13
National Airlines, Inc.	334,006	274,868	114,964,154	79,787,525	36,010,332	21,340,195	87.47	85.96
Northeast Airlines, Inc.	104,446	94,409	20,543,216	19,331,350	17,188,358	12,092,972	61.62	61.81
Northwest Airlines, Inc.	1,835,054	1,266,404	984,605,211	834,272,164	113,681,659	60,275,992	85.87	83.84
Pennsylvania-Central Airlines Corporation	4,017,149	3,549,553	767,281,334	641,253,435	87,530,906	52,197,207	83.63	81.61
Transcontinental & Western Air, Inc.	11,047,113	8,779,740	5,819,712,197	4,976,794,380	312,720,950	225,448,658	92.29	89.46
United Air Lines, Inc.	8,921,691	8,584,742	6,777,127,314	6,486,180,963	391,666,218	320,341,546	96.30	91.79
Western Air Lines, Inc.	736,194	787,868	362,894,788	357,923,653	50,417,547	30,917,120	89.05	85.49
Total	53,300,911	46,941,458	27,457,678,261	24,861,723,110	2,011,151,497	1,509,531,326	90.16	88.03
Index (1943 = 100)	113.68	100.00	110.44	100.00	133.23	100.00	102.42	100.00
Colonial Airlines, Inc.	206,154	176,973	64,121,976	51,608,193	17,536,760	11,404,739	82.17	80.31
Hawaiian Airlines, Ltd.	5,956,333	4,899,978	917,572,019	775,823,449	13,843,824	13,817,072	94.31	93.82
Grand Total	59,523,398	52,018,409	28,439,372,256	25,689,154,752	2,042,532,081	1,534,753,137	90.12	88.03
Index (1943 = 100)	114.43	100.00	110.71	100.00	133.09	100.00	102.37	100.00

	January	February	March	April	May	June	July	August	September	October	Total
Passengers carried (unduplicated) (total revenue and non-revenue) ¹	242,683	221,011	251,445	272,273	311,829	326,878	371,972	400,904	394,491	433,971	3,227,457
16 domestic airlines	255,001	231,809	262,347	283,899	324,275	340,961	387,674	419,838	409,868	450,066	3,365,738
Total airlines											
Passenger miles flown (total revenue and non-revenue)	141,474,106	125,088,611	142,834,165	155,159,351	181,038,023	193,288,705	211,703,804	227,350,700	225,471,943	239,022,032	1,842,431,441
16 domestic airlines	143,727,253	127,107,076	144,884,424	157,414,978	183,563,374	196,130,812	214,800,861	231,262,843	228,763,362	242,469,884	1,870,124,867
Total airlines											

¹Preliminary. Due to the delay in reporting by some companies, these figures are subject to revision in subsequent publications.

Comparison of operations for six-month periods and calendar years of 1943 and 1942

Item	January-June 1943	January-June 1942	Percent of increase or decrease over 1942	July-December 1943	July-December 1942	Percent of increase or decrease over 1942	1943	1942	Percent of increase or decrease over 1942
Revenue miles flown	48,233,012	61,997,873	-22.20	55,368,431	48,104,987	15.10	103,601,443	110,102,860	-5.90
Revenue passengers carried	1,509,124	1,875,268	-19.52	1,842,413	1,473,866	25.01	3,351,537	3,349,134	.07
Revenue passenger miles flown	722,853,487	718,646,082	.59	883,265,981	679,396,064	30.01	1,606,119,468	1,398,042,146	14.88
Express carried (pounds)	25,789,044	16,317,713	58.04	31,754,547	23,651,072	34.26	67,543,591	39,988,785	43.97
Express pound-miles flown	14,130,447,232	9,498,986,026	48.76	16,105,401,939	13,883,430,696	16.00	30,235,849,171	23,382,416,722	29.31
Mail pound-miles flown	31,772,337,520	17,446,925,509	82.11	40,081,749,396	24,686,328,311	62.36	71,854,086,916	42,133,253,820	70.54
Available passenger seat miles flown	843,232,076	1,076,369,832	-21.66	981,617,726	861,302,923	13.97	1,824,849,802	1,937,672,755	5.82
Revenue passenger load factor (percent)	85.72	66.77	28.38	89.98	78.88	14.07	88.01	72.15	21.98

¹Includes mail pound-miles flown by Hawaiian Airlines, Ltd., which operates under a domestic air mail contract with the United States Post Office Department.

Domestic Air Carrier Statistics for Calendar Year 1943

Operations by Routes

Operator and routes	Months operated	Revenue miles flown	Revenue passengers carried	Revenue passenger miles flown	Express carried (pounds)	Express pound-miles flown	Mail pound-miles flown	Revenue passenger load factor (percent)
All American Aviation, Inc., Pittsburgh-Jamestown, Huntington, Harrisburg, Philadelphia, etc. Total	12	1,029,751	0	0	150,058	20,351,733	64,338,282	—
American Airlines, Inc. Total	12	26,397,687	919,958	435,913,741	21,058,223	9,764,229,681	16,233,923,942	88.18
Dallas-Los Angeles	12	7,559,763	163,479	133,710,234	2,138,487	2,130,408,482	6,503,021,593	—
New York-Chicago	12	4,754,126	206,182	74,402,134	8,293,967	3,473,530,879	2,447,095,130	—
Boston-New York	12	1,242,737	124,180	21,346,433	2,931,423	474,216,771	401,332,073	—
Boston-Cleveland	12	214,808	20,588	3,001,210	458,500	85,428,760	23,952,866	—
Cleveland-Nashville	12	709,698	56,096	12,216,810	1,097,713	282,476,619	269,528,778	—
New York-Fort Worth	12	7,092,647	202,488	118,043,648	3,453,992	1,896,512,576	4,913,323,152	—
Washington-Chicago	12	1,919,862	70,329	29,511,968	1,504,215	651,066,397	1,068,825,080	—
Chicago-Fort Worth	12	1,320,912	48,132	22,382,886	988,737	632,085,666	611,378,169	—
Buffalo-Toronto	12	46,217	6,513	496,220	38,898	2,956,248	1,467,101	—
El Paso or Fort Worth-Mexico City	12	1,536,917	21,471	20,602,197	150,291	135,547,283	0	—
Braniff Airways, Inc. Total	12	4,057,199	171,581	66,520,573	1,393,250	703,613,330	2,173,629,496	91.75
Chicago-Dallas	12	2,349,764	69,939	39,500,550	969,404	592,051,924	1,577,525,675	—
Denver-Brownsville	12	1,066,530	98,908	26,545,290	419,514	110,823,305	592,440,281	—
San Antonio-Houston and Corpus Christi	1	12,213	639	120,553	2,593	491,815	1,921,800	—
San Antonio-Laredo	4	28,872	2,095	314,250	1,739	246,286	1,771,650	—
Chicago & Southern Air Lines, Inc. Total	12	2,179,412	87,898	35,293,185	859,472	373,296,563	908,881,321	83.92
Chicago-New Orleans	12	1,820,266	72,205	30,144,524	761,696	331,512,431	783,535,540	—
Memphis-Houston	12	359,146	15,693	5,148,661	97,776	41,784,132	125,345,791	—
Continental Air Lines, Inc. Total	12	1,543,375	52,372	14,873,461	114,898	40,258,838	225,605,846	86.30
Denver-El Paso	12	1,099,420	35,056	10,856,737	85,081	33,921,596	139,543,552	—
Pueblo-Tulsa	12	443,955	17,316	4,016,721	29,817	6,337,272	66,062,294	—
Delta Air Corporation Total	12	2,339,581	115,116	43,361,264	613,972	236,055,752	1,373,962,160	88.91
Charleston & Savannah-Fort Worth	12	1,802,955	84,225	33,250,389	364,916	156,621,443	1,065,564,752	—
Atlanta-Cincinnati	12	536,625	30,891	10,110,875	249,056	79,434,309	308,397,408	—
Eastern Air Lines, Inc. Total	12	13,210,748	408,470	215,352,713	4,519,080	2,760,485,818	8,708,781,795	87.32
New York-San Antonio & Brownsville	12	4,879,694	152,246	86,429,455	1,531,064	786,186,361	2,585,877,550	—
New York-Miami	12	6,039,709	156,525	87,964,792	1,963,090	1,525,168,416	4,727,082,735	—
Chicago-Jacksonville	12	2,003,476	85,274	35,835,120	913,757	407,447,705	1,311,380,504	—
Atlanta-Tampa	12	287,869	14,425	5,123,346	111,698	41,683,336	84,441,006	—
Inland Air Lines, Inc. Total	12	850,449	12,440	4,011,549	25,832	5,891,744	78,745,020	65.94
Denver-Great Falls	12	538,372	12,440	4,011,549	23,966	5,351,041	58,182,397	—
Cheyenne-Huron	12	312,077	0	0	1,866	5,540,703	15,562,623	—
Mid-Continent Airlines, Inc. Total	12	1,494,549	38,673	10,775,481	177,929	43,360,732	270,415,492	62.42
Minneapolis-Tulsa	12	923,526	28,863	8,010,205	146,361	33,996,407	220,037,739	—
Minneapolis-Des Moines, St. Louis & Kansas City	12	571,023	9,810	2,765,276	31,568	9,364,325	50,211,753	—
National Airlines, Inc. Total	12	1,923,697	76,173	23,036,901	343,578	101,817,131	463,641,236	86.27
Jacksonville-Miami	12	711,438	34,928	8,363,753	117,547	26,071,542	128,843,521	—
Jacksonville-New Orleans	12	1,212,259	41,245	14,673,148	226,031	75,745,589	334,797,715	—
Northeast Airlines, Inc. Total	12	726,941	36,263	9,091,388	114,810	23,226,246	33,872,589	59.58
Boston-Presque Isle & Moncton	12	726,941	36,263	9,091,388	114,810	23,226,246	33,872,589	—
Northwest Airlines, Inc. Total	12	4,475,129	121,567	63,787,683	1,554,732	1,000,534,952	3,987,068,984	83.89
Chicago-Seattle	12	4,395,063	121,567	63,787,683	1,546,173	999,411,015	3,982,048,953	—
Minneapolis-Duluth	12	80,066	0	0	8,559	1,123,937	5,020,031	—
Pennsylvania-Central Airlines Corporation Total	12	3,097,469	244,961	52,312,234	4,357,938	790,484,269	999,230,198	81.20
Norfolk-Detroit	12	2,323,181	198,136	40,974,785	3,919,734	703,375,961	915,348,559	—
Detroit-Milwaukee	12	176,276	16,872	2,758,239	219,270	39,071,265	21,515,585	—
Pittsburgh-Buffalo	12	148,992	10,988	2,161,267	151,646	25,062,632	7,367,137	—
Pittsburgh-Birmingham	12	449,020	18,955	6,417,943	67,288	22,974,411	54,998,917	—
Transcontinental & Western Air, Inc. Total	12	16,263,234	442,254	242,003,432	10,749,067	5,997,975,366	14,312,533,070	89.22
New York-Los Angeles	12	11,402,351	269,359	171,212,312	6,774,776	4,368,575,460	10,505,717,310	—
Dayton-Chicago	12	241,133	17,074	3,871,905	659,974	148,552,231	103,378,390	—
Boulder City-San Francisco	12	451,184	12,442	5,767,421	121,868	62,028,492	329,767,302	—
Kansas City-Pittsburgh via Chicago	12	3,275,124	87,672	47,129,586	2,369,933	1,226,595,922	2,987,832,330	—
St. Louis-Detroit via Cincinnati & Dayton	12	682,989	46,708	10,868,237	674,018	142,964,412	304,383,615	—
Washington-Dayton via Columbus	5	210,453	8,999	3,153,971	148,498	49,259,214	81,454,123	—
United Air Lines, Inc. Total	12	21,955,194	542,904	357,196,623	10,553,461	7,931,779,115	21,107,427,878	92.10
New York-San Francisco	12	15,843,878	266,413	241,573,933	8,597,060	7,052,720,756	17,382,765,587	—
Salt Lake City-Seattle	12	1,169,545	37,432	23,109,313	313,935	202,705,753	0	—
Seattle-San Diego	12	4,601,050	128,106	86,565,516	1,526,138	641,849,039	3,640,956,792	—
Seattle-Vancouver	12	128,650	15,407	2,019,739	43,877	5,768,436	16,376,770	—
Toledo-Washington	5	212,071	5,546	3,928,122	72,451	28,735,131	67,328,729	—
Western Air Lines, Inc. Total	12	2,057,028	80,907	32,589,240	957,291	442,487,901	873,093,696	84.65
San Diego-Salt Lake City	12	1,612,026	67,117	28,199,828	917,881	431,630,696	817,130,924	—
Salt Lake City-Great Falls	12	356,963	10,220	3,882,906	28,303	9,354,378	52,023,731	—
Great Falls-Lethbridge	12	88,039	5,570	506,416	11,107	1,502,827	3,337,041	—
Grand Total	12	103,601,443	3,351,537	1,606,119,468	57,543,591	30,235,849,171	71,854,086,916	88.01

*This route was extended from Amarillo to Denver August 1, 1943.

†Mail pound-miles flown by Hawaiian Airlines, Ltd. have been added to the total for domestic pound-miles flown as the mail carried by this company is under a domestic mail contract.

Mail-pound Miles Up

The Civil Aeronautics Board announces mail pound-miles flown by the 18 domestic airlines in August increased 50.48 percent and express pound-miles increased 22.03 percent, over the corresponding month in 1943.

Airline Earnings Go Up

The Civil Aeronautics Board has announced the net operating revenue in August for 18 domestic air carriers, including All American Aviation and Hawaiian Airlines, reached a total of \$4,925,974 which is an increase of \$1,643,765.

Extends Western's Service

Civil Aeronautics Board grants Western Air Lines a route between Los Angeles and Denver, via Las Vegas, and Grand Junction. Applications of Transcontinental & Western Air, United Air Lines and Continental Airlines for the route denied.

Airline Orders

Service

No. 3216 extends the temporary foreign air carrier permit of the Royal Dutch Air Lines (KLM) for service between Miami, Central America, the Canal Zone, the northeast coast of South America and Caribbean Islands for six months from Oct. 31, 1944. (Oct. 21.)

No. 3217 orders supplemental consolidation of applications of Northwest Airlines and others in the Pacific Case and assigns for hearing at later date. (Oct. 24.)

No. 3219 dismisses application of United Air Lines for certificate authorizing daily scheduled air transportation on certain feeder routes in Washington, Oregon and California. (Oct. 25.)

No. 3220 withdraws and dismisses application of Arthur J. Heiser, upon his request, from the proceeding known as the New England Case—Docket 399 et al. (Oct. 25.)

No. 3221 dismisses application of Grays Harbor Lines, upon its request, from the proceeding known as the West Coast Case—Docket 250 et al. (Oct. 25.)

No. 3222 orders dismissal of application of Oregon Airways and others for certificate following failure of Oregon Airways and Pacific Northwest Airways to submit exhibits. (Oct. 25.)

No. 3230 extends temporary permit held by Expreso Inter-Americano S. A. for service between Miami and Central and South American points for 3 months from Oct. 31, 1944. (Oct. 28.)

No. 3231 grants Department of Justice permission to intervene in the application of South Export Airlines and others in South Atlantic Route Case. (Oct. 30.)

No. 3232 permits Eastern Air Lines to operate non-stop services between Columbia, S. C. and Jacksonville, Fla. (Oct. 30.)

No. 3233 permits Eastern Air Lines to operate non-stop service between Columbia, S. C. and Washington, D. C. (Oct. 30.)

No. 3242 rescinds order temporarily suspending service by Western Air Lines at Idaho Falls, Idaho, and Helena, Mont. (Nov. 3.)

No. 3250 permits immediate inauguration of non-stop service by Eastern Air Lines between Evansville, Ind. and Chicago, Ill. (Nov. 7.)

No. 3251 grants permission to George S. Schwamm doing business as Pittsburgh Air Service to intervene in the application for certificates and amendment of certificates by Ellis Air Transport and Ketchikan Air Service. (Nov. 7.)

No. 3252 approves agreement between Continental Air Lines and Mid-Continent Airlines relating to performance of emergency and maintenance service. (Nov. 7.)

No. 3253 dismisses application of Charles R. Bentley, doing business as Southeast Airlines Feeder, from the proceedings known as the Florida Case—Docket 489 et al. (Nov. 7.)

No. 3258 authorizes, subject to Presidential approval, temporary permit to Aero-Transportes, S. A. to transport persons, property and foreign mail between Monterrey, Mexico, and Brownsville, Tex., and between Monterrey and Eagle Point, Tex., via Monclova and Nueva Rosita, Mexico, for 90 days from approval date, with extension limit fixed at maximum of 180 days. Approved by President Nov. 6. (Oct. 26.)

No. 3259 authorizes, subject to Presidential approval, temporary permit to Lineas Aereas Mexicanas to transport persons, property and foreign mail between Cananea, Mexico, and Nogales, Ariz. for 90 days, from approval date, with extension limit fixed at maximum of 180 days. Approved by President Nov. 6. (Oct. 26.)

No. 3260 denies motion of Northeast Airlines to consolidate portions of route No. 27, route No. 65 and the Mayflower Route into one to be known as route No. 27. (Nov. 10.)

No. 3261 authorizes American Airlines to extend route No. 4 from intermediate point El Paso, Tex. via Oklahoma City, Okla., to Tulsa, Okla.; route No. 23 from intermediate point Nashville, Tenn., via Tulsa to Oklahoma City; inclusion of Joplin, Mo. on route No. 30 as intermediate point between Springfield, Mo. and Tulsa. Authorizes Braniff Airways to extend route No. 15 from Oklahoma City via Tulsa, Muskogee, Okla., Fort Smith and Little Rock, Ark. to Memphis, Tenn. Authorizes Chicago and Southern Air Lines to extend route No. 51 to include Little Rock as intermediate point between Pine Bluff, Ark. and Memphis. (Nov. 10.)

No. 3262 approves agreement between Pennsylvania-Central Airlines and Northwest Airlines for air conditioning Northwest's planes at Chicago. (Nov. 11.)

No. 3263 grants request of Western Air Lines to operate between Los Angeles and Denver via Las Vegas, Nev. and Grand Junction, Colo. Denies

application of Transcontinental & Western; United Air Lines and Continental Air Lines. (Nov. 11.)

No. 3265 orders portions of Northwest Airlines application for certificate to engage in traffic between two points in U. S. be severed from proceedings. Action taken on motion of Pennsylvania-Central Airlines. (Nov. 20.)

No. 3266 denies motion of Pan American to consolidate Dockets 1345 and 1346 with Docket Nos. 855 and others in the application of American Export Lines and that action with respect to consolidation for the purpose of decision be deferred. (Nov. 21.)

No. 3275 permits United Air Lines to inaugurate on December 1 non-stop service between Eugene, Ore. and Oakland, Calif. and between San Francisco and Eugene. (Nov. 23.)

No. 3276 grants permission to the City of Reading, Pa. to intervene in the application for certificate authorizing additional air service between the U. S. and Ottawa and Montreal, Canada. (Nov. 23.)

No. 3277 grants permission to American Airlines to lease from Northwest Airlines premises and equipment for joint operation of remote radio transmission. (Nov. 23.)

No. 3278 grants permission to Greater Miami Port Authority to intervene in the application of Eastern Air Lines for certificate in what is known as the Florida Case. (Nov. 23.)

No. 3279 grants permission to the Orleans Airport Commission to intervene in the application of Eastern Air Lines for certificate in the Florida Case. (Nov. 23.)

No. 3280 dismisses applications of several airlines for certificates in the New England Case. (Nov. 28.)

No. 3281 dismisses application of Pioneer Airlines for certificate upon request of applicant. (Nov. 23.)

Miscellaneous

No. 3239 revises consolidation order in the Florida Case permitting J. I. Leak to withdraw his application and orders it reassigned and made part of Docket No. 1392. (Nov. 1.)

No. 3240 grants permission for expeditious use of General Logan Airport by Eastern Air Lines in its Boston service. (Nov. 1.)

No. 3241 grants permission for expeditious use of Huntsville Municipal Airport to Pennsylvania-Central Airlines in its service to Huntsville, Ala. (Nov. 2.)

No. 3246 withholds document filed in application for certificates for additional air service in Mexico, Central and South American and Caribbean area by Greater Miami Port Authority on the ground it contains secret information affecting national defense. (Nov. 4.)

No. 3247 approves agreement between Chicago and Southern Airlines and Delta Air Corporation for air conditioning Delta's planes at Jackson, Miss. (Nov. 4.)

No. 3248 approves agreement between Pennsylvania-Central Airlines and Delta Corporation for maintenance of services for Delta planes at Birmingham, Ala. (Nov. 4.)

No. 3249 approves interlocking relationships between Fred G. Gurley as an officer or director of the Railway Express Agency and certain designated railroads. (Nov. 6.)

No. 3272 grants permission to City of Philadelphia and U. S. Maritime Commission to intervene in application of American Export Airlines in South Atlantic Route Case. (Nov. 22.)

No. 3273 denies petition of City of Lake Charles, Baton Rouge and parish of East Baton Rouge to intervene in application of Eastern Air Lines for certificate in what is known as the Florida Case. (Nov. 22.)

Airman Orders

Suspensions

No. 3227 suspends student pilot certificate of Delbert Paul Fisher for 30 days for flying at less than 500 feet. (Oct. 27.)

No. 3228 suspends student pilot certificate of Ralph E. Phillips for 30 days for flying at less than 500 feet. (Oct. 27.)

No. 3229 suspends commercial pilot certificate of Nate Rubinstein for 30 days for flying too low and executing acrobatic maneuvers not necessary in an instructional flight. (Oct. 27.)

No. 3244 suspends private pilot certificate of Robert H. Rogers for 30 days on complaint of failure to keep accurate log book record; and disregard of periodical inspection regulation. (Nov. 3.)

No. 3255 suspends private pilot certificate of George Lester McNamar for carrying passengers for hire without proper certification; for giving dual instruction though not rated as an instructor and for entering a control zone in instrument weather without having filed flight plan and lack-

ing instrument equipment. Suspension period 90 days. (Nov. 7.)

No. 3256 suspends student pilot certificate of Thomas Leon Fox for taking off for practice solo flight when he did not have his certificate and flying at less than 500 feet. Suspension period 90 days. (Nov. 7.)

No. 3272 orders suspension of Richard John Thomas Kennedy's pilot certificate for 90 days for flying too low. (Nov. 21.)

Revocations

No. 3223 revokes machinist certificate of William Carter Allen for violations of Civil Air Regulations on six counts. (Oct. 27.)

No. 3224 revokes student pilot license of Wallace Marburger for disregard for the safety and lives of others. (Oct. 27.)

No. 3225 revokes student pilot certificate of John Warren Sears for acts disclosing carelessness and disregard for the lives and safety of others. (Oct. 27.)

No. 3226 revokes private license of Roland Richard Ricci for attempting to submit answers not his own when he took examination for a commercial pilot certificate. (Oct. 27.)

No. 3235 revokes the mechanic certificate of Andrew J. Chandler because he failed certain written re-examinations. (Oct. 31.)

No. 3254 revokes student pilot certificate of Raymond A. Fisher for taking off from undesignated landing area and attempting to take off with a passenger not certified flight instructor. (Nov. 7.)

No. 3257 revokes private pilot certificate of Fred Girod for flying too low over a golf course and performing acrobatic maneuvers within 30 feet of the ground. (Nov. 7.)

No. 3264 revokes commercial pilot certificate of Herbert William Jenkins for flying too low and performing acrobatic stunts. (Nov. 10.)

No. 3268 orders revocation of private certificate of Wallace Marburger it having become apparent that at the time the private certificate was issued it was not known that Marburger's student certificate had been revoked. (Nov. 21.)

No. 3269 revokes student pilot certificate of John Julian Cravens for making, or causing to be made, inaccurate log book entries and for flying too low. (Nov. 21.)

No. 3270 revokes student pilot certificate of John Russell Davis for flying too low. (Nov. 21.)

No. 3271 revokes student pilot certificate of Hiel N. Campbell, Jr. for flying while intoxicated; carrying a passenger who was not a certificated instructor in seat with functioning dual controls; flying too low and performing acrobatic stunts at a low altitude. (Nov. 21.)

Miscellaneous

No. 3234 assigns the proceeding re Newton H. Reid for oral argument. (Oct. 31.)

No. 3243 dismisses complaint against Leonard George Reuss, Jr. holder of private pilot certificate. Board finds plane was flown short distance on advice of instructor and mechanic that it was safe for such an operation. (Nov. 3.)

Regulations

Amdt. 20-5.....Effective Nov. 25, 1944

20.129 Military competence.

20.1290 Pilot certificate. An applicant who is, or was within the preceding 12 calendar months, a member of the armed forces of the United States and has served on solo flying status for a period of 6 consecutive months shall be deemed to have met the aeronautical knowledge, experience, and skill requirements of the Civil Air Regulations for the issuance of a pilot certificate appropriate to the military pilot rating held: *Provided*, That he passes a written examination on Parts 20 and 60 of the Civil Air Regulations and submits reliable documentary evidence showing: (a) that he is a member of the armed forces or that he has been honorably discharged or returned to inactive status, (b) that he is, or was, a rated military pilot, and (c) his total solo flying time.

20.1291 Aircraft ratings. Type, class, and horsepower ratings will be issued in connection with such pilot certificates or in connection with a private or commercial pilot certificate held by the applicant, if he presents reliable documentary evidence showing that within the preceding 12 calendar months he has had at least 10 hours of flying time during which he was sole manipulator of the controls of aircraft of the type, class, and horsepower for which a rating is sought.

Reg. 324.....Effective Oct. 25, 1944

Any first pilot listed in Eastern Air Lines, Inc., air carrier operating certificate on October 1, 1944, as qualified to operate aircraft in scheduled air

transportation between Raleigh, N. C., and Charleston, S. C., over Amber civil airway No. 7, will be deemed competent to pilot aircraft in scheduled air transportation between Raleigh, N. C., and Charleston, S. C., via Columbia, S. C., over Red civil airway No. 16 and Blue civil airway No. 28, upon completion of one-way trip over the route as second pilot. Each pilot, in qualifying, must make at least one landing at the Columbia, S. C., airport.

Reg. 325.....Effective Nov. 7, 1944

AMENDMENT NO. 1 OF SECTION 280.2 OF THE ECONOMIC REGULATIONS—REPORTS OF STOCK OWNERSHIP OF AFFILIATES OF AIR CARRIERS.

Subsection (c) of section 280.2 of the Economic Regulations is hereby amended to read as follows: "c. *Exceptions for Air Carriers and Officers or Directors of Air Carriers.* The reports required in paragraph (b) need not be filed as of December 31 of any year by any such affiliate:

(1) if such affiliate is an air carrier required to file a report as of December 31 of the same year, pursuant to section 407(b) of the Act; or

(2) if such affiliate is an individual required to file a report as an officer or director of any air carrier, on or before March 1 of the following year, pursuant to section 407(c) of the Act; provided, however, that if between said December 31 and March 1 of the following year, any such individual should be relieved of the requirement of filing said report as an officer or director of any air carrier, then the exception herein created shall immediately terminate as to said individual, and said individual shall file, on or before April 1, the report required in paragraph (b)(2) hereof."

Reg. 326.....Effective Nov. 25, 1944

An applicant for a pilot certificate, (1) who within the six calendar months preceding the date of her application was a member of the Women Airforce Service Pilots (WASP) and, (2) who has been on active duty with solo flying status for at least six consecutive months as a member of such organization, shall be deemed to have met the aeronautical knowledge, experience, and skill requirements of the Civil Air Regulations for the issuance of a private or commercial pilot certificate whichever is appropriate to her service experience:

(a) if she submits to an inspector of the Administrator a certificate issued by the responsible military officer in charge of flying showing that she was at the time of separation from her service on solo flying status as a rated pilot, and the pilot rating held and the type, class, and horsepower of aircraft she had been officially rated to pilot;

(b) if the requirements for the pilot rating held are at least equivalent to the requirements of the Civil Air Regulations for the type and grade of pilot certificate sought; and

(c) if she passes the written examination on Parts 20 and 60 of the Civil Air Regulations required of applicants for the type and grade of certificate sought.

Type, class, and horsepower ratings will be issued in connection with such pilot certificates or in connection with a private or commercial pilot certificate held by the applicant, if she presents reliable documentary evidence showing that within the preceding 12 calendar months she has had at least 10 hours of flying time during which she was sole manipulator of the controls of aircraft of the type, class, and horsepower for which a rating is sought.

Reg. 327.....Effective Nov. 10, 1944

Any first pilot listed in the American Airlines, Inc., air carrier operating certificate on November 1, 1944, will be deemed to have met the route requirements of § 40.2611(b) of the Civil Air Regulations for the piloting of aircraft in scheduled air transportation under day contact conditions on the approved route between Laredo, Tex., and Wink, Tex., upon completion of two one-way trips over such route.

This regulation shall be effective for 90 days.

Further CAR Comment Asked

The Safety Bureau of the Civil Aeronautics Board submits for comment by interested parties revised drafts of Parts 20, 43, and 60 of the Civil Air Regulations. These incorporate many of the suggestions received after the previous submission, and are being sent out again for comment before action by the Board. Comments should be submitted to the Board in writing before Dec. 30.

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AIR REGULATIONS . . . As of December 1, 1944

TITLE	PART No.	PRICE		DATE LATEST EDITION		NO. AMENDMENTS ISSUED	
		Part	Manual	Part	Manual	Part	Manual
Aircraft							
Airworthiness Certificates.....	01	\$0.05	None	10/15/42	None	2	1
Type and Production Certificates.....	02	.05	None	3/1/41	None		
Airplane Airworthiness.....	04	.15	(1)	11/1/43	2/1/41	2	5
Engine Airworthiness.....	13	.05	None	8/1/41	None		
Propeller Airworthiness.....	14	.05	(1)	7/15/42	12/1/38		
Equipment Airworthiness.....	15	Free	\$0.10	4/15/44	7/1/38		
Radio Equipment Airworthiness.....	16	0.05	Free	2/13/41	2/13/41		1
Maintenance, Repair, and Alteration of Aircraft Engines, Propellers, Instruments.....	18	.05	0.50	9/1/42	6/1/43		
Airmen							
Pilot certificates.....	20	.10	None	2/15/44	None	5	
Airline Pilot Rating.....	21	.05	None	10/1/42	None	3	
Lighter-than-air Pilot Certificates.....	22	.05	None	10/15/42	None		
Mechanic Certificates.....	24	.05	None	7/1/43	None		
Parachute Technician Certificates.....	25	.05	None	12/15/43	None		
Traffic Control Tower Operator Certificates.....	26	.05	None	2/1/44	None		
Aircraft Dispatcher Certificates.....	27	.05	None	10/1/43	None		
Physical Standards for Airmen.....	29	.05	None	6/1/42	None	2	
Air Carriers							
Air Carrier Operating Certification.....	40	.10	None	10/10/44	None		
Air Agencies							
Flying School Rating.....	50	.05	Free	11/1/40	12/40	3	2
Ground Instructor Rating.....	51	.05	None	12/15/43	None		
Repair Station Rating.....	52	.05	Free	10/1/42	2/41		
Mechanic School Rating.....	53	.05	(1)	8/1/42	5/40		
Parachute Loft Certificates and Ratings.....	54	.05	None	1/21/43	None		
Air Navigation							
Air Traffic Rules.....	60	.10	0.15	8/15/44	8/1/43		
Scheduled Air Carrier Rules.....	61	.10	None	2/1/44	None	2	
Foreign Air Carrier Regulations.....	66	.05	None	3/1/42	None		
Miscellaneous							
Definitions	98	.05	None	10/15/42	None		
Regulations of the Administrator							
Aircraft Registration Certificates.....	301	Free	None	3/31/43	None		
Recordation of Aircraft Ownership.....	303	Free	None	3/31/43	None		
Seizure of Aircraft.....	331	Free	None	12/8/41	None		

¹ Out of stock. ² Special regulations No. 223. ³ Reprinted, including amendments.

Notes: Those parts and manuals for which there is a price are obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Remittances must be by cash or by money order, payable to the Superintendent.

Production Approvals Issued by the CAA

The CAA has approved the following types of aircraft, engines, propellers, and a new type of parachute, plus new models of a previously accepted engine, propellers, and the N. J. Fulgent flares.

New Types

(Approval numbers and dates of approval in parenthesis)

Aircraft—

Budd, model RB-1, 2 to 26 place closed land monoplane. Engines, 2 Pratt & Whitney Twin Wasps SIC3G, with 16:9 spline coupled reduction gears and one 3½ N damper, or R-1830-92. (Type Certificate No. 756, 10-27-44)

Beech, model Beechcraft C18S (Army C-45, C-45A, UC-45B, UC-45F, AT-7, AT-7A, AT-7C; Navy JRB-1, JRB-2, JRB-3, JRB-4, SNB-2, SNB-2C), 10 place closed land monoplane. Engines, 2 Pratt & Whitney Wasp Jr. SB with one 4½ N and one 9 N damper. (Type Certificate No. 757, 9-23-44)

Engines—

Ranger, models SGV-770C-1, -1B, -1C; 12 cyl. vee inverted air cooled. Ratings: 520 hp at 3150 rpm for take-off, 450 hp at 3000 rpm from sea level to approximately 12,000 ft. altitude for maximum, except take-off. Dry weights 740 lbs., 759 lbs. and 746 lbs. respectively. (Type Certificate No. 232, 10-24-44)

Ranger, model SGV-770C-2, 12 cyl. vee inverted air cooled. Ratings: 550 hp at 3,300 rpm for take-off, 500 hp at 3,150 rpm from sea level to 9,100 ft. altitude for maximum, except take-off. Dry weight 757 lbs. (Type Certificate No. 232, 10-24-44)

Propellers—

Wirkwire Spencer, model W22T; steel hub with wood blades; 8 ft. 6 in. diameter; automatic pitch; 430 hp, 2,200 rpm. (Type Certificate No. 805, 10-9-44)

Annesley, model 75; steel hub with wood blades; 6 ft. 0 in. diameter; two-position controllable pitch; 65 hp, 2,300 rpm. (Type Certificate No. 806, 10-9-44)

Beech, model R201; steel hub with wood blades; 7 ft. 1 in. diameter; controllable pitch; 185 hp, 2,550 rpm. (Type Certificate No. 807, 10-10-44)

Appliance—

Standard, parachute models B-7 and B-8, back pack, flat canopy type, 24 ft. diameter, silk or nylon, 22 lbs. and 18 lbs. weight respectively. (Type Certificate No. 157, 10-12-44)

New Models

Engine—

Continental, model A-65-14; 4 cyl. horizontal opposed air cooled. Ratings: 75 hp at 2,675 rpm for take-off, 65 hp at 2,300 rpm at sea level for maximum, except take-off. (Type Certificate No. 205, 10-30-44)

Propeller—

Hamilton Standard, 23F 3-blade propeller with 6497A-O, 6498A-O, 6521A-O or 6522A-O blades; steel hub and aluminum alloy blades; 17 ft. 1 in. to 14 ft. 1 in. diameter; hydraulically controllable (feathering) pitch; 2500 hp, 1020 rpm. (Type Certificate No. 764, 10-14-44)

Appliance—

New Jersey Fulgent, flares model Wiley SA-8; 300,000 minimum candle power; 3-minute minimum duration; mechanical discharge; 18 lbs. weight. (Type Certificate No. 46, 8-8-44)

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